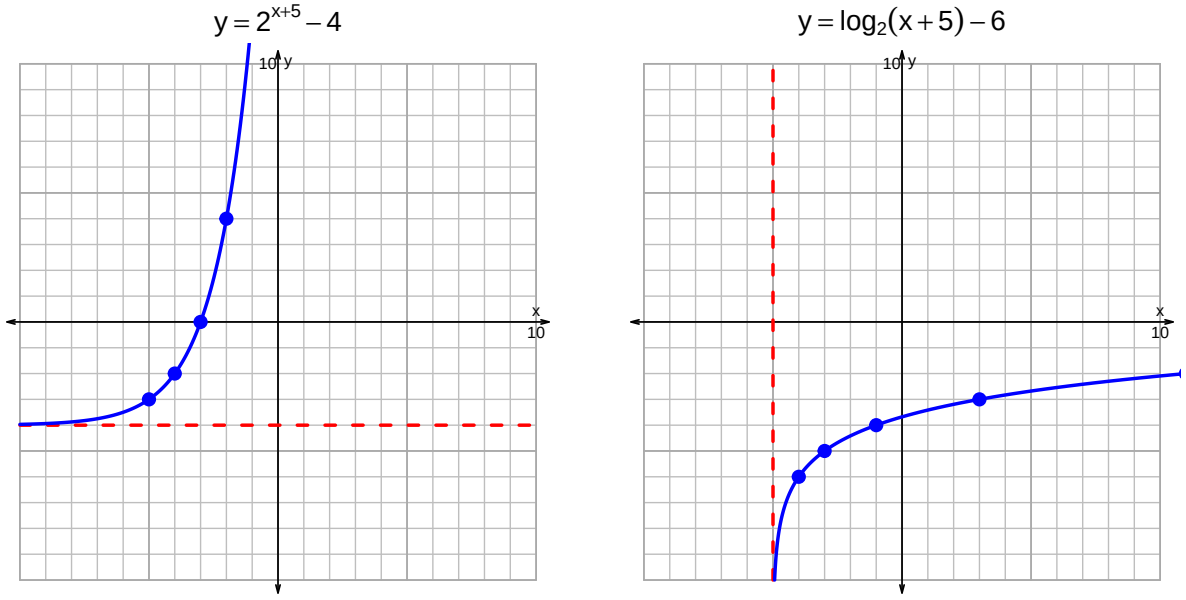
Name: Date:

s18quiz: EXP LOG (Solution v150)

1. Graph $y = 2^{x+5} - 4$ and $y = \log_2(x+5) - 6$ on the grids below. Also, draw any asymptotes with dotted lines.



2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$23 = \left(\frac{5}{3}\right) \cdot 10^{4t/7}$$

Divide both sides by $\frac{5}{3}$.

$$\frac{23 \cdot 3}{5} = 10^{4t/7}$$

Take log, base 10, of both sides.

$$\log_{10}\left(\frac{23 \cdot 3}{5}\right) = \frac{4t}{7}$$

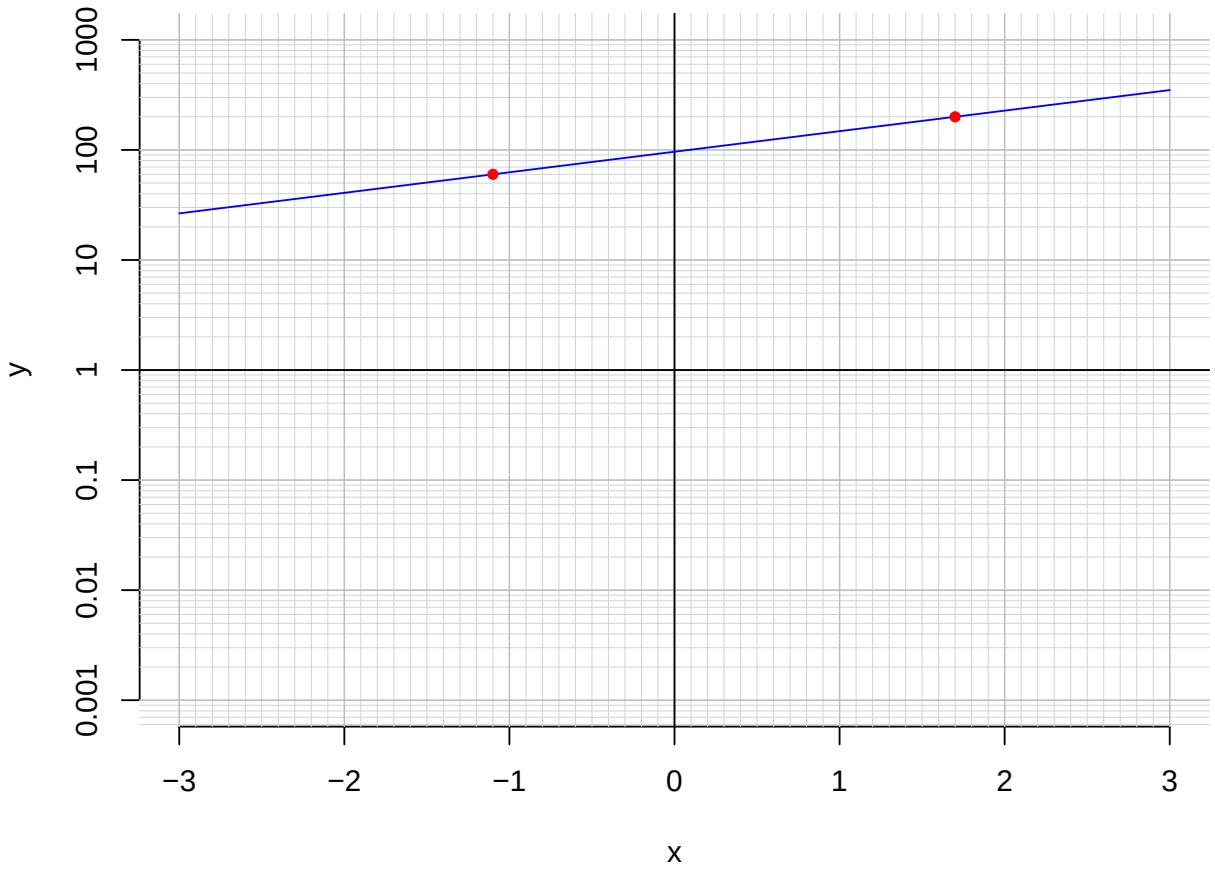
Divide both sides by $\frac{4}{7}$.

$$\frac{7}{4} \cdot \log_{10}\left(\frac{23 \cdot 3}{5}\right) = t$$

Switch sides.

$$t = \frac{7}{4} \cdot \log_{10}\left(\frac{23 \cdot 3}{5}\right)$$

3. An exponential function $f(x) = 96.3 \cdot e^{0.43x}$ is graphed below on a semi-log plot.



a. Using the plot above, evaluate $f(1.7)$.

$$f(1.7) = 200$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{1}{0.43} \cdot \ln\left(\frac{x}{96.3}\right)$$

c. Using the plot above, evaluate $f^{-1}(60)$.

$$f^{-1}(60) = -1.1$$